FORM PTO-1390 (REV 11-2000)	U.S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 604-630
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S APPLICATION NO (If known, see 37 C.F.R. 1.5) 10/088911 Unassigned
INTERNATIONAL APPLICATION NO PCT/GB00/03646	INTERNATIONAL FILING DATE 25 September 2000	PRIORITY DATE CLAIMED 25 September 1999

TITLE OF INVENTION

OPTICAL DATA SIGNALS

APPLICANT(S) FOR DO/EO/US

GUILD et al

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.

☐ The U.S. has been elected by the expiration of 19 months from the priority date (Article 31).

A copy of the International Application as filed (35 U.S.C. 371(c)(2)).

a. ☒ is attached hereto (required only if not communicated by the International Bureau).

b. ☐ has been communicated by the International Bureau.

c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).

a. ☐ is attached hereto.

b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).

☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C 371(c)(3))

a. ☐ are attached hereto (required only if not communicated by the International Bureau).

b. ☐ have been communicated by the International Bureau.

c. ☐ have not been made; however, the time limit for making such amendments has **NOT** expired.

d. ☐ have not been made and will not be made.

☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

☐ A English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 To 20 below concern document(s) or information included:

☐ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98.

☐ An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included

☒ A FIRST preliminary amendment.

☐ A SECOND or SUBSEQUENT preliminary amendment.

☐ A substitute specification.

☐ A change of power of attorney and/or address letter.

☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821-1.825

☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).

☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

☐ Other items or information.

612445

10/069841 JC13 Rec'd PCT/PTO 25 MAR 2002

APPLICATION NO (If known, see 37 C.F.R. 1.5)	INTERNATIONAL APPLICATION NO	ATTORNEY'S DOCKET NUMBER
Unassigned 10/069841	PCT/GB00/03646	604-630

☒ The following fees are submitted:

	CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE (37 C.F.R. 1.492(a)(1)-(5):		
-- Neither international preliminary examination fee (37 C.F.R. 1.482) nor international search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO $1040.00		
-- International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO $890.00		
-- International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but international search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO $740.00		
-- International preliminary examination fee (37 C.F.R. 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) $710.00		
-- International preliminary examination fee (37 C.F.R. 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) $100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 1040.00	
Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e)).	$ 130.00	

CLAIMS	NUMBER FILED		NUMBER EXTRA	RATE			
Total Claims	21	-20 =	1	X	$18.00	$ 18.00	
Independent Claims	3	-3 =	0	X	$84.00	0.00	
MULTIPLE DEPENDENT CLAIMS(S) (if applicable)					$280.00	$ 0.00	

TOTAL OF ABOVE CALCULATIONS =	$	**1188.00**
☐ Applicant claims small entity status. See 37 CFR 1.27 The fees indicated above are reduced by 1/2.		0.00
SUBTOTAL =	$	**1188.00**
Processing fee of $130.00, for furnishing the English Translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 C.F.R. 1.492(f)). +		0.00
TOTAL NATIONAL FEE =	$	**1188.00**
Fee for recording the enclosed assignment (37 C.F.R. 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28, 3.31). **$40.00** per property +	$	0.00
Fee for Petition to Revive Unintentionally Abandoned Application ($1280.00 – Small Entity = $640.00)	$	0.00
TOTAL FEES ENCLOSED =	$	**1188.00**
	Amount to be: refunded	$
	Charged	$

a. ☒ A check in the amount of $1188.00 to cover the above fees is enclosed.
b. ☐ Please charge my Deposit Account No. 14-1140 in the amount of $_____ to cover the above fees. A duplicate copy of this form is enclosed.
c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-1140. A duplicate copy of this form is enclosed.
d. ☒ The entire content of the foreign application(s), referred to in this application is/are hereby incorporated by reference in this application.

NOTE: Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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Leonard C. Mitchard
NAME

29,009 March 25, 2002
REGISTRATION NUMBER Date

612445

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

GUILD et al

Serial No. Unassigned

Filed: March 25, 2002

For: OPTICAL DATA SIGNALS

Atty. Ref.: 604-630

Group:

Examiner:

* * * * * * * * * * *

March 25, 2002

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Please amend the above application as follows:

IN THE CLAIMS

Please cancel Claims 9 and 21 without prejudice.

Please substitute the following amended claims for corresponding claims previously presented. A copy of the amended claims showing current revisions is attached.

7. (Amended) A method as claimed in claim 1, wherein following the modulation of the light beam with the data stream, the optical data signal is passed a constant amplitude modulator to which is supplied the control information to be applied to the optical data signal.

8. (Amended) A method as claimed in claim 1, wherein the data stream is applied to the light by means of a Mach-Zehnder interferometer to which is supplied the data stream, so as to produce an amplitude-modulated optical data signal.

18. (Amended) A method as claimed in [any of claims 12 to 17] claim 12, wherein the optical data signal comprises time-division multiplexed data packets each of which has associated therewith individual control information.

19. (Amended) A method as claimed in [any of claims 12 to 18] claim 12, wherein the optical data signal are carried by wavelength division multiplexed optical channels each of which has associated therewith individual control information.

Please add the following new claims:

22. (New) An optical data signal receiver for reading a light beam modulated with control information using a substantially constant amplitude modulation and modulated with data using an amplitude modulation technique, the receiver comprising a control information reader and a router for routing the modulated data stream in response to the control information.

23. (New) An optical data signal receiver as claimed in claim 21, further comprising means for removing the control information from the modulated light beam.

24. (New) Apparatus for modifying control information carried by an optical data signal transmitted through an optical network, the apparatus comprising a reader and decoder for reading and decoding the control information, a router for routing of the stream of data in dependence upon the decoded information and a wavelength converter comprising a semiconductor optical amplifier.

REMARKS

The above amendments have been made to place the application in a more traditional format. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "**Version With Markings To Show Changes Made**."

Respectfully submitted,

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IN THE CLAIMS

7. (Amended) A method as claimed in [any of claims 1 to 4] claim 1, wherein following the modulation of the light beam with the data stream, the optical data signal is passed a constant amplitude modulator to which is supplied the control information to be applied to the optical data signal.

8. (Amended) A method as claimed in [any of the preceding claims] claim 1, wherein the data stream is applied to the light by means of a Mach-Zehnder interferometer to which is supplied the data stream, so as to produce an amplitude-modulated optical data signal.

18. (Amended) A method as claimed in [any of claims 12 to 17] claim 12, wherein the optical data signal comprises time-division multiplexed data packets each of which has associated therewith individual control information.

19. (Amended) A method as claimed in [any of claims 12 to 18] claim 12, wherein the optical data signal are carried by wavelength division multiplexed optical channels each of which has associated therewith individual control information.

OPTICAL DATA SIGNALS

Field of the Invention

This invention relates to a method of encoding control information on an optical data signal, to a transmitter configured to encode such information, and to a method of modifying or removing control information carried by an optical data signal.

Background to the Invention

In an all-optical packet-switched network, the signal remains in the optical domain from source to destination. In these networks, wavelength converters will be an enabling technology for dynamic routing of optical packets through the network and for resolving contention within the switching nodes. The routing control is a critical function; the packets of data have a routing tag or header and the ability dynamically to update or modify the routing tag/header is essential in certain types of network architectures. This functionality must be performed with minimal impact on the optical payload and several techniques for achieving this have been previously proposed.

Summary of the Invention

The present invention aims at providing a particularly effective technique permitting the modification of control tags or headers associated with packets transmitted through an optical network, which technique has a minimal effect on the data itself.

According to one aspect of this invention, there is provided a method of encoding control information on an optical data signal to be transmitted through an optical network, comprising operating an optical source to generate

a substantially coherent continuous-wave light beam, amplitude-modulating the light beam with a data stream to produce an optical data signal, and also modulating the data signal with control information, using a substantially constant amplitude modulation technique.

According to a second aspect of this invention, there is provided an optical data signal transmitter adapted to encode control information on an optical data signal to be transmitted through an optical network, which transmitter comprises an optical source arranged to generate a substantially coherent continuous-wave light beam, an amplitude-modulator which modulates said light beam with a data stream to produce an optical data signal, and a substantially constant amplitude modulator arranged also to modulate the data signal with control information, using a non-amplitude modulation technique.

A third aspect of this invention provides a method of modifying control information carried by an optical data signal transmitted through an optical network, comprising the steps of encoding the control information on the optical signal in a non-amplitude varying format so as to be associated with a stream of data, transmitting the optical signal to a traffic processor, reading and decoding the control information and then deciding upon the routing of the stream of data depending upon the decoded information, and passing the optical data signal through a wavelength converter based on a semiconductor optical amplifier thereby simultaneously removing the control information.

It will be appreciated that the present invention relies on the fact that only intensity-modulated (IM) signals are wavelength-converted when employing cross-gain modulation (XGM) in a semi-conductor optical amplifier (SOA). An SOA is therefore opaque to modulation formats that convey information in a non amplitude-varying fashion. A preferred form of the method of this invention employs a subcarrier signaling format and encodes this information on

the polarisation of the continuous-wave light preceding the payload of an optical packet. The header information is extracted using direct-detection and the original header is removed without any additional guard bands or timing control.

Brief Description of the Drawings

By way of example only, further details of methods of and apparatus for performing this invention will now be described, referring to the accompanying drawings, in which:-

Figure 1 illustrates an example of an optical packet transmitter;

Figure 2 illustrates a technique for control information decoding and removal;

Figure 3a shows the header information at the input to the polarisation modulator and Figures 3b and 3c the output of decoder in a switching node;

Figure 4 shows the optical spectral output after the AWG; and

Figure 5 shows the AWG output after wavelength conversion.

Detailed Description

Referring initially to Figure 1, a data packet is 1.6μs in duration and consists of a payload containing a pseudo-random bit sequence (PRBS) at 2.5Gbit/s, an 8-bit header and a conservative guard band of 20ns. The latter allows for the laser turn-on/turn-off times associated with the wavelength converter within the node. The header consists of a byte of 78Mbit/s nonreturn-to-zero (NRZ) data: start and stop bits for synchronisation and six data bits that denote the packet destination. The baseband header amplitude modulates a 2.7GHz subcarrier in the microwave mixer. A 5Gbit/s $LiNbO_3$ phase modulator was used

for modulating polarisation states. The linearly polarised signal from the Mach-Zehnder interferometer (amplitude modulator) was rotated to be 45° to the principal axis of the phase modulator, and the drive voltage adjusted such that orthogonal polarisation states were assigned for a peak and trough of the subcarrier cosine. An erbium-doped fibre amplifier (EDFA) amplifies the resulting signal.

At the switching node (Figure 2), the optical signal is filtered by the demultiplexer (λ_{3dB} = 1.8nm) and the tap coupler directs 10% of the signal to three polarisers via an optical splitter. (This may be implemented using a Stokes Analyser). The polarisers are arranged to pass horizontally polarised light through one arm, polarisation states at +45° to the vertical through a second arm, and right hand circular through the third arm. In this way, the incoming polarisation-modulated subcarrier will always result in an amplitude-varying component at 2.7GHz at the output when a "one" is received for all evolutionary states of the signal. After optical to electrical conversion (O/E), each of the signals are band-pass filtered (f_c = 2.7GHz, f_{3dB} = 120MHz), rectified using a microwave mixer and filtered using a low-pass filter (f_{3dB} = 50MHz). The sum of the components is the recovered header.

The control electronics process the baseband header information to determine the wavelength to which the payload is to be converted. After passing through an optical delay equal to the electronic processing time (50ns), the signal is coupled into the wavelength converter using an optical circulator. Cross-gain modulation in a SOA is used to translate the wavelength of the packet to 1552nm. To obviate the need for an output filter, a counter-propagating arrangement is employed, and the input/output wavelengths are chosen to lie in the stop-and pass-bands of the arrayed-waveguide grating (AWG). In this way, very high rejection of the residual input signal, due to the SOA residual facet reflectivity, is achieved.

To demonstrate the principle of operation, alternate packets may be encoded with a "10101001" header. Within the switching node, a lookup table is updated at the start of the process to direct such packets to output port 1 of the AWG by activating the 1552nm laser at the appropriate time. Figure 3a shows the header signal at the input to the polarisation modulator after up-conversion in the microwave mixer. The output of the optical packet generator is fed directly into the optical switching node arrangement. The polarisation controller at the input of the header receiver allows the state of polarisation of the signal to be adjusted in order to present a variety of polarisation states to the receiver.

The decoded signal at the output of the electrical combiner in the switching node is shown in Figure 3b. To observe the effects of pattern dependence, a 2^{23} -1 PRBS sequence was transmitted and the resulting data eye is shown in Figure 3c.

Figure 4 shows the routed packets at output port 1 of the AWG after wavelength conversion. The residual input signal at 1554.4nm is suppressed to more than 45dB less than the converted signal, and the time-domain plots are illustrated in Figure 5. Owing to the inverting nature of the SOA, the header is extinguished and no polarisation to amplitude conversion is visible (lower trace).

Confirmation of suppression of the header can be obtained by feeding the output of the wavelength converter to a header decoder; tests have shown that no residual header could be observed.

By increasing the bandwidth of the band-pass filter, the header can be transmitted at a higher bit-rate. Alternatively, the header data aggregate can be increased by employing frequency division multiplexing of additional subcarrier signals.

For optical packet-switched networks where polarisation scrambling is required for the high bit-rate payloads, and the described technique of this invention may

easily be implemented. In this scenario the depolarising tone, driving the scrambler, may be modulated with the inverse of the header information to impose the header information on to the optical packet.

From the above, it can be seen that the invention provides a technique for polarisation-encoding subcarrier multiplexed headers on to an optical packet. The XGM functionality of an SOA is used effectively to remove the header without the addition of any timing control, and without the need for a guard band between the header and payload. A simple direct-detection receiver can be used to decode the header information and all-optical wavelength conversion and routing of 2.5Gbit/s payloads is thereby possible.

CLAIMS

1. A method of encoding control information on an optical data signal to be transmitted through an optical network, comprising operating an optical source to generate a substantially coherent continuous-wave light beam, amplitude-modulating the light beam with a data stream to produce an optical data signal, and also modulating the data signal with control information, using a substantially constant amplitude modulation technique.

2. A method as claimed in claim 1, wherein the control information is added to the optical data signal by means of a polarisation modulation technique.

3. A method as claimed in claim 1, wherein the control information is added to the optical data signal by means of a phase-shift-keying modulation technique.

4. A method as claimed in claim 1, wherein the control information is added to the optical data signal by means of a frequency-shift-keying modulation technique.

5. A method as claimed in claim 4, wherein the substantially constant amplitude modulation technique is applied to the optical beam before the modulation thereof with the data stream.

6. A method as claimed in claim 5, wherein the substantially constant amplitude modulation technique is applied directly to the optical source.

7. A method as claimed in any of claims 1 to 4, wherein following the modulation of the light beam with the data stream, the optical data signal is passed a constant amplitude modulator to which is supplied the control information to be applied to the optical data signal.

8. A method as claimed in any of the preceding claims, wherein the data stream is applied to the light by means of a Mach-Zehnder interferometer to which is supplied the data stream, so as to produce an amplitude-modulated optical data signal.

9. A method of encoding control information on an optical data signal to be transmitted through an optical network as claimed in claim 1 and substantially as hereinbefore described, with reference to the accompanying drawings.

10. An optical data signal transmitter adapted to encode control information on an optical data signal to be transmitted through an optical network, which transmitter comprises an optical source arranged to generate a substantially coherent continuous-wave light beam, an amplitude-modulator which modulates said light beam with a data stream to produce an optical data signal, and a substantially constant amplitude modulator arranged also to modulate the data signal with control information, using a non-amplitude modulation technique.

11. An optical data signal transmitter as claimed in claim 10, wherein the optical source comprises a laser source.

12. A method of modifying control information carried by an optical data signal transmitted through an optical network, comprising the steps of encoding the control information on the optical signal in a non-amplitude varying format so as to be associated with a stream of data, transmitting the optical signal to a traffic processor, reading and decoding the control information and then deciding upon the routing of the stream of data depending upon the decoded information, and passing the optical data signal through a wavelength converter based on a semiconductor optical amplifier thereby simultaneously removing the control information.

13. A method as claimed in claim 12, wherein further control information is encoded on the optical signal following wavelength conversion thereof, so as to be associated with the wavelength-converted data signal.

14. A method as claimed in claim 13, wherein the further control information is encoded on the optical signal by a substantially constant amplitude modulation technique.

15. A method as claimed in claim 14, wherein the further control information is added to the wavelength-converted optical data signal by means of a polarisation modulation technique.

16. A method as claimed in claim 12, wherein the further control information is added to the wavelength-converted optical data signal by means of a phase-shift-keying modulation technique.

17. A method as claimed in claim 12, wherein the further control information is added to the wavelength-converted optical data signal by means of a frequency-shift-keying modulation technique.

18. A method as claimed in any of claims 12 to 17, wherein the optical data signal comprises time-division multiplexed data packets each of which has associated therewith individual control information.

19. A method as claimed in any of claims 12 to 18, wherein the optical data signal are carried by wavelength division multiplexed optical channels each of which has associated therewith individual control information.

20. A method as claimed in claim 18, wherein the control information comprises a data header or tag for the data stream contained in each packet.

21. A method of modifying control information carried by an optical data signal transmitted through an optical wavelength-multiplexed network as claimed in claim 12 and substantially as hereinbefore described, with reference to the accompanying drawings.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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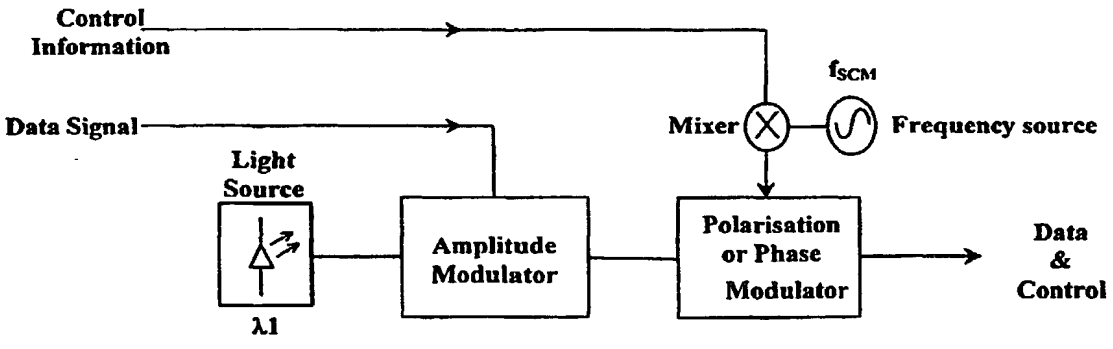
Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: OPTICAL DATA SIGNALS



(57) Abstract: A method of encoding control information on an optical data signal to be transmitted through an optical network, comprising operating an optical source to generate a substantially coherent continuous-wave light beam, amplitude-modulating the light beam with a data stream to produce an optical data signal, and also modulating the data signal with control information, using a substantially constant amplitude modulation technique.

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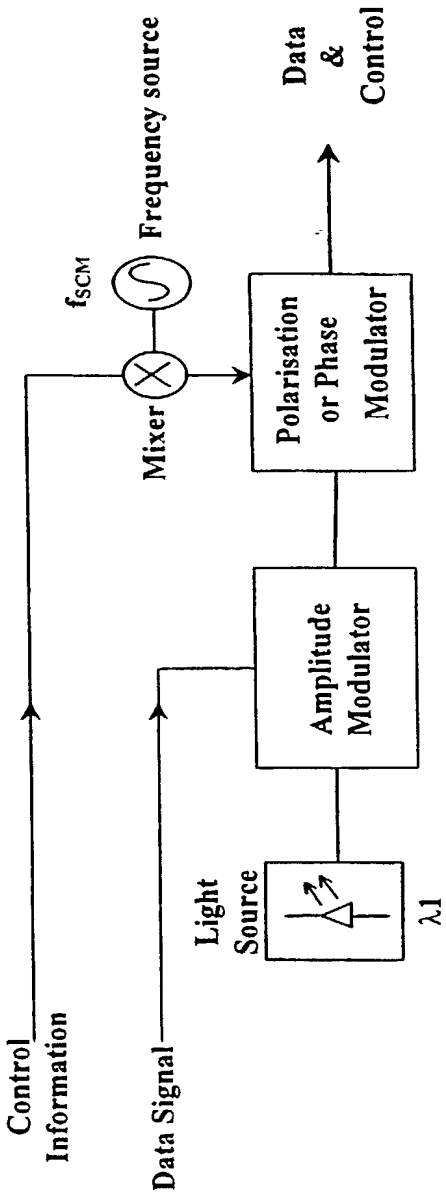

Control Information
Data Signal
Light Source
λ1
Amplitude Modulator
Polarisation or Phase Modulator
Mixer
f_{SCM}
Frequency source
Data & Control

Figure 1

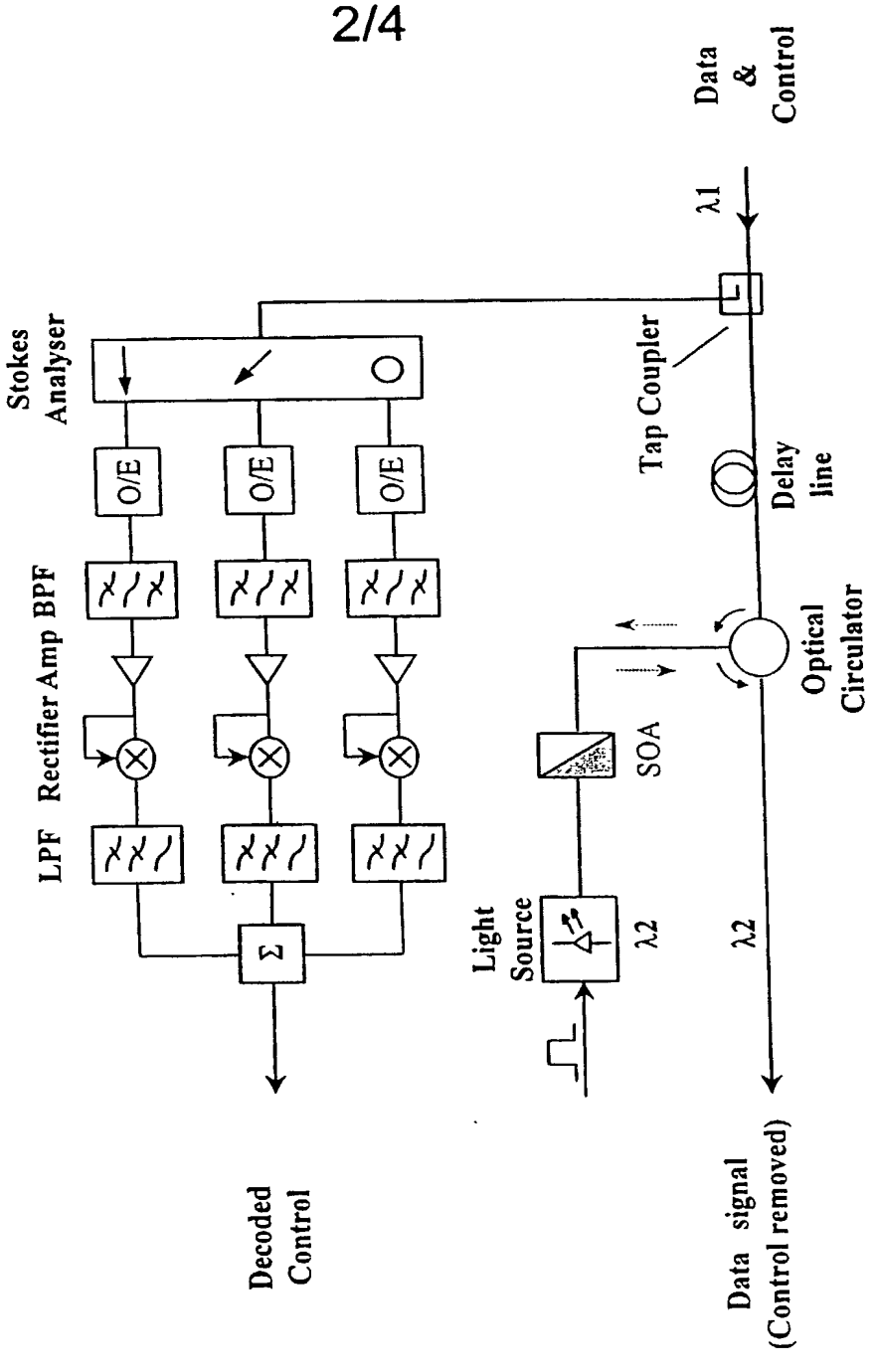

Data & Control
λ1
Tap Coupler
Delay line
Optical Circulator
SOA
Light Source
λ2
λ2
Data signal (Control removed)
Stokes Analyser
O/E
O/E
O/E
BPF
Rectifier
Amp
LPF
Σ
Decoded Control

Figure 2

Figure 3

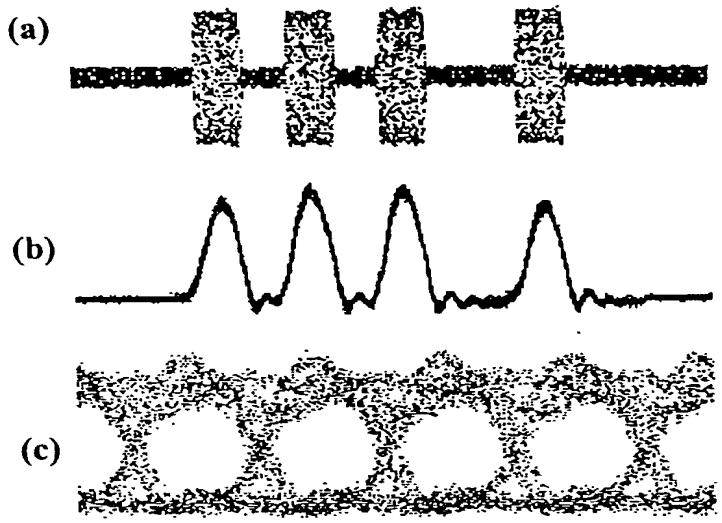


Figure 4

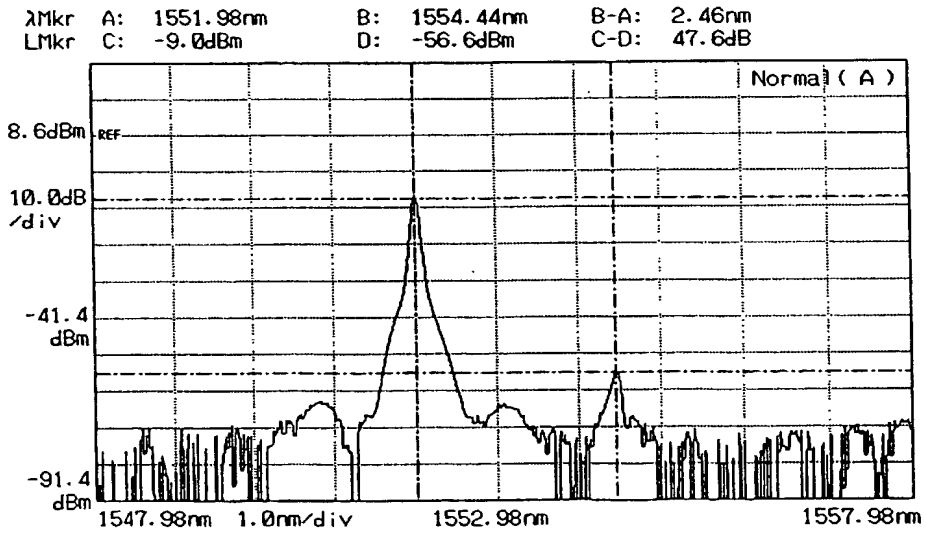
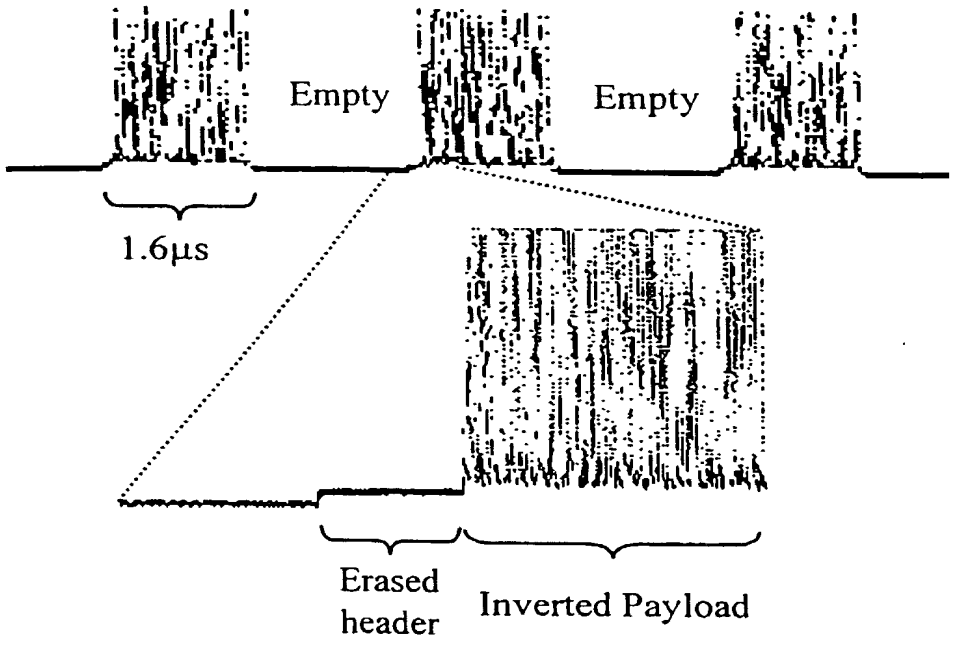


Figure 5



143635

APPLICATION FOR UNITED STATES PATENT
Declaration and Power of Attorney

As a below named inventor, I hereby declare: THAT my residence, post office address and citizenship are as stated below next to my name; THAT I verily believe I am anan original, jointjoint inventor of the invention entitled: OPTICAL DATA SIGNALS described and claimed in the attached specification; THAT I have reviewed and understand the contents of the above identified specification, including (to the best of my ability) the claims, as amended by any amendment referred to above; THAT I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application in accordance with 37 C.F.R 1.56(a) and 35 U.S.C 102, 103; and that applications for patent or inventor's certificate on this invention or discovery which have been filed by me or my legal representatives or assigns in any country foreign to the United States of America and, if filed within one year before this application, from which priority is claimed under 35 U.S.C. 119/365 are as follows:

United Kingdom Application No. 9922678.9 filed 25th September 1999

And I hereby appoint Nixon & Vanderhye whose address is Eighth Floor, 1100 North Glebe Road, Arlington, Virginia 22201-4714, USA (to whom all communications about this application are to be directed), and the below named partners (of the same address) individually and collectively my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith and with the resulting patent, and I hereby authorise them to act and rely on instructions from and to communicate with BTG INTERNATIONAL LIMITED and its employees and by whom I declare that I have consented after full disclosure to be represented unless/until I instruct Nixon & Vanderhye in writing to the contrary.

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I declare further that all statements made herein of own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

APPLICATION FOR UNITED STATES PATENT
Declaration and Power of Attorney

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1-00 KMG Date: 2/5/2002

Kenneth Guild, a British subject
Residence and Post Office address: 252 Chinook, Highwoods, Colchester, Essex, CO4 4UX England ENG

2-00 _____ Date:

Dimitra Simeonidou, a British subject
Residence and Post Office address:3 Keepers Green, Braiswick, Colchester, Essex, CO4 5UT, England ENG

3-00 _____ Date:

Anna Tzanakaki, a British subject
Residence and Post Office address: 16 Balfe Court, Colchester, Essex, CO4 3XL, England ENG

4-00 _____ Date:

Michael O'Mahony, a British subject
Residence and Post Office address: 6 Priory Road, Felixstowe, Suffolk, IP11 7NE, England ENG

143635

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_____ Date: 29/05/02
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Residence and Post Office address: 252 Chinook, Highwoods, Colchester, Essex, CO4 4UX, England

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Dimitra Simeonidou, a British subject
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